National Aeronautics and Space Administration

# LAGNIAPPE

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## SSC to begin RS-68 testing and assembly

Stennis Space Center won a contract in September 1997 to assemble and test the RS-68 engine and to test the first-stage common booster core for the Boeing Co.'s Delta 4 Evolved Expendable Launch Vehicle (EELV).

The EELV is a $1.4 billion U.S. Air Force program that will produce the next generation of unmanned launch vehicles. The new EELV will replace the aging fleet of Atlas, Delta and Titan rockets that have been in service since the 1960s. Like those rockets, the Delta 4 will send NASA and Department of Defense satellites into orbit and launch planetary probes.

The Rocketdyne Division of Boeing North American Inc. in Canoga Park, Calif., is developing the RS-68 engine. It will generate between 650,000 and 745,000 pounds of thrust, making it the world's largest liquid hydrogen, liquid oxygen engine. Space Shuttle Main Engines, currently tested at Stennis, produce between 350,000 and 512,000 pounds of thrust.

Because Delta 4 rockets will be expendable, each engine will be a throwaway with a one-mission life span. Stennis personnel will assemble and test every Delta 4 flight engine. The engine will then be shipped to Decatur, Ala., where it will be assembled into the rocket.

The RS-68 provides a 30 percent gain in performance over conventional liquid-fueled engines. It does not rely on new technology or exotic materials, and it uses 7 percent fewer parts than the Space Shuttle Main Engine.

NASA officials at Stennis said the new test program will not result in a large increase in employment, but it will secure existing employment and the space center's role in propulsion testing.

"We're gradually increasing our employment as new programs come along," said NASA's Lon Miller, deputy director of propulsion testing. "It's gradual because other programs, such as the Space Shuttle Main Engine program, are ramping down as other programs are building up. Fortunately, the buildup is slightly greater than the

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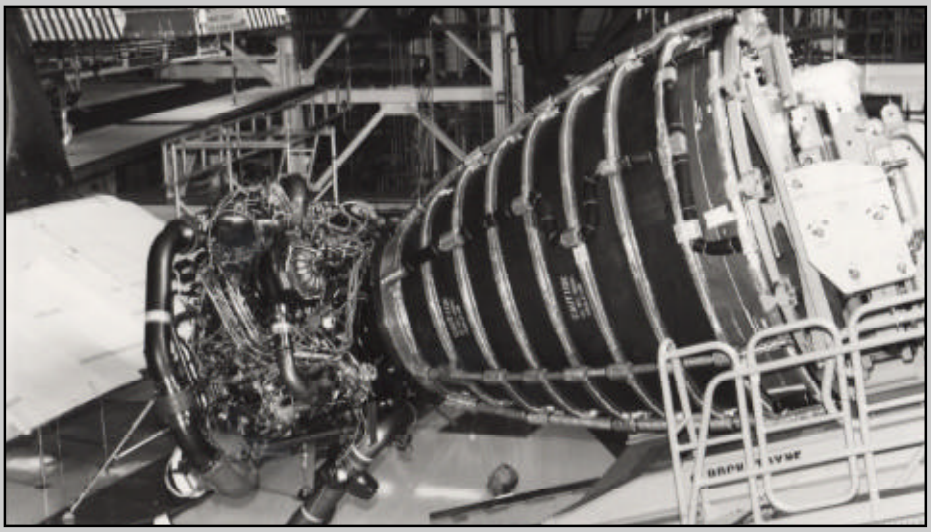

**Space Shuttle Main Engines are placed on the Space Shuttle Endeavour. This will be the first flight of three Block IIA engines aboard the shuttle. All were tested and proven flight worthy at Stennis.**

## Block IIA SSMEs take first flight on shuttle

STS-89, set for launch today from Kennedy Space Center, will be the first Space Shuttle mission to fly three Block IIA main engines that were tested at Stennis Space Center.

NASA's ongoing upgrades to the Space Shuttle include enhancements to the orbiter's liquid-fueled main engines.

The Block IIA configuration is NASA's next step toward a more reliable and economic main engine. The configuration contains a new large throat main combustion chamber that is considered the single greatest safety improvement to the shuttle engine.

Other enhancements include modifications to the main injector, upgraded hydraulic actuators and sensors, and improvements in the low-pressure fuel and oxidizer turbopumps.

The first Block IIA Space Shuttle Main Engine arrived for testing at SSC in March 1997.

Shuttle upgrades are critical for deploying the International Space

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## John Glenn to return to space in October

History was made last week with NASA's announcement that Senator John Glenn has become NASA's newest astronaut. Glenn will fly aboard the Space Shuttle Discovery, scheduled to launch in October and will serve as a payload specialist on that mission.

Glenn made history 35 years ago when he strapped himself into a nine- by -seven foot capsule atop an experimental rocket and became the first American to orbit the Earth. Recently he asked NASA if he could fly again to conduct space-based research on aging, but only if he met the Agency's physical and mental requirements.

"Not only is John Glenn a Marine test pilot, an astronaut, and the first American to

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**Sen. John Glenn**

## LAGNIAPPE **Commentary**

# *NASA celebrates its 40th year...*

NASA was created 40 years ago this year, and employees at Stennis Space Center are planning to join their colleagues across the Agency during 1998 to note America's many accomplishments as the world's preeminent nation in the peaceful exploration of space.

President Dwight D. Eisenhower signed Congressional legislation July 29, 1958, that officially established the new space agency. Prior to the Agency's birth, America's involvement in aviation and possible space flight was pioneered by the National Advisory Committee for Aeronautics (NACA). NASA began its first day of business on Oct. 1, 1958, with just under 8,000 employees (most transferred from NACA) and a budget of $101 million.

Actually, NASA was created to give focus to the exploration of outer space, an endeavor that had been splintered in its infancy by intraservice rivalries among the Army, Navy and Air Force. The military services were competing with each other for funding for missiles, rockets and associated weapons systems. In this fierce competition, each branch of the military wanted sole propriety of the new realm of outer space.

The successful launch by the Soviet Union of Sputnik 1 on Oct. 4, 1957, set the stage for the all-out mobilization of America's aerospace program. Few events in the country's history have raised the nation's ire in the way the Soviet Union's "first in space" feat with Sputnik 1 did.

Indeed, the perceived "missile gap" became the number one issue of the day in American politics. Sen. Lyndon Johnson of Texas foresaw the importance of space exploration, and, thanks to his political savvy, the importance of it within the American political arena. As a result, Johnson and his staff members were credited with drafting the Space Act of 1958 and the creation of NASA as an agency to carry out the nation's space policy. President Eisenhower, too, understood the importance of America's entry into space exploration but wanted to approach the issue in a low-key, conservative manner. Eisenhower could see the military significance but could not fathom space exploration playing a major role in foreign policy or as part of America's centerpiece in the Cold War.

Historians believe that Johnson wanted to personally lay claim to the space program and, indeed, be the father of "America in Space." Events in the early days of the organization and the initial development of aerospace activities in the United States would bear this observation out.

Until the Soviet's initial victory in outer space, the people of the United States were enjoying a return to peace and prosperity with the end of the Korean War in 1953.

By the end of 1958, American space probes caused some scientists to believe the Van Allen radiation belts might make travel outside the Earth's atmosphere hazardous to space travelers. Later, protective shielding proved to be adequate.

Even NASA's top leadership did not envision that the infant civilian agency would land humans on the moon and reach heights in the heavens that it was destined to in its first 40 years.

To be continued... M.R.H.


## NASA NEWSCLIPS

**Rothenberg to head Office of Space Flight; Diaz named Goddard director---** Joseph Rothenberg, director of NASA's Goddard Space Flight Center in Greenbelt, Md., has been named to head the Agency's Office of Space Flight, NASA Administrator Daniel Goldin announced. Rothenberg will lead the Human Exploration and Development of Space Enterprise.

Goldin also named Alphonso Diaz to succeed Rothenberg as Goddard director. Diaz is currently that center's deputy director.

As Associate Administrator for the Office of Space Flight, Rothenberg will be responsible for all NASA human space flight programs, as well as a variety of expendable launch vehicle operations and tracking and communications functions. The appointment became effective Jan. 12.

**A significant achievement toward the first launch of the International Space Station has been unveiled ---** The Space Shuttle's first new, super lightweight external fuel tank rolled out during ceremonies at NASA's Michoud Assembly Facility in New Orleans Jan. 16.

In order to launch the Space Station to its on-orbit location, "the Space Shuttle system needed additional performance—either through more power or less weight," said Parker Counts, manager of the External Tank Project at NASA's Marshall Space Flight Center in Huntsville, Ala.

"Since each pound removed from the external tank equals a pound of payload that can be carried into space," Counts said, "NASA developed the super lightweight tank." The new external tank is the same size as the one currently used on the shuttle—but about 7,500 pounds lighter.

The largest single component of the shuttle, the 154-foot-long external tank, stands taller than a 15-story building and is as wide as a silo with a diameter of about 27 feet. The external tank holds the liquid hydrogen and liquid oxygen propellants in two separate tanks for the shuttle's three main engines.

The two major changes to the external tank involved materials and design. Both the liquid hydrogen tank and the liquid oxygen tank are constructed of aluminum lithium — a lighter, stronger material than the metal alloy used for the shuttle's current external tank.

# Launch to the moon of the Lunar Prospector is deemed a success

NASA's Discovery Program of low-cost, science-focused space exploration missions got a major boost Jan. 6 with the successful launch of Lunar Prospector. The spacecraft is now performing extremely well, according to operations personnel in the Mission Control Center at NASA's Ames Research Center in Moffett Field, Calif.

The compact spacecraft, atop a Lockheed Martin Athena II launch vehicle, roared off Spaceport Florida's Pad 46 at the new, commercial launch complex at Cape Canaveral, Fla., on schedule at 8:28 p.m. CST less than one second into the opening of the launch window.

The launch vehicle's three stages worked as planned, rocketing the spacecraft to an altitude of 62,500 feet after 88 seconds at Stage 1 burnout. All additional milestones were achieved on schedule during the remainder of the ascent phase, culminating in attainment of a successful "parking orbit" around the Earth.

# STS-89 will bring Wolf home this month from Mir

The Space Shuttle Endeavour is scheduled to launch from Pad 39-A at 9:48 p.m. today. This will be the 89th shuttle mission and the first flight of the Block IIA Space Shuttle Main Engine.

Crew:
Terrence Wilcutt, Commander
Joe Edwards, Pilot

Mission Specialists:
Bonnie Dunbar
Michael Anderson
James Reilly
Salizhan Shakirovich Sharipov
Andrew Thomas

Note: STS-89 was originally scheduled to return Wendy Lawrence but will now return David Wolf (Mir 24-25 / STS-86) and leave Andrew Thomas on Mir. Thomas will return on STS-91.

**Five SSC employees were honored this month with NASA's Space Flight Awareness Award. They will attend the launch of STS-89. Pictured front from left are Johnson Controls World Services' Sheila Comeaux, Lockheed Martin Stennis Operations' Debra Rushing, back row, Johnson Controls World Services' Phil Price, NASA's Ted Franklin and Rocketdyne's Victor Alfaro. The Space Flight Awareness program was established to prevent human error by instilling in civil service and contractor employees an awareness of personal responsibility for shuttle mission success and motivating the exemplary performance necessary to achieve this mission.**


**The 9th Annual Dr. Martin Luther King Jr. Birthday Observance Program was held Wednesday, Jan. 14 in the Visitors Center auditorium. Father Roy Arthur Lee, chaplain at Keesler Air Force Base in Biloxi, Miss., served as guest speaker for the celebration. Master of Ceremonies was Eric Labat of NAVOCEANO. The theme of the program was "King Week '98: Remember! Celebrate! Act! A Day On, Not A Day Off." It was sponsored by the Stennis Space Center Association for Cultural Awareness (ACA) and the NAVOCEANO Black Employment Program. Pictured is Captain Larry Warrenfeltz, Commanding Officer of NAVOCEANO, who welcomed the 212 attendees to the program. Denise Dedeaux, ACA president, delivered closing remarks.**

## GLENN...

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orbit the Earth, he brings a unique blend of experience to NASA," said NASA Administrator Daniel Goldin in making the announcement of Glenn's selection. "He has flight, operational, and policy experience. Unlike most astronauts, he never got the opportunity for a second flight. He is part of the NASA family, an American hero, and he has the right stuff for this mission."

Glenn, who still flies his own plane, flew 149 missions as a Marine fighter pilot in World War II and Korea, and was hit by enemy fire 11 times. As a test pilot, he set a transcontinental speed record and recently set a record for speed on a flight from Dayton, Ohio, to the state of Washington.

Since aging and space flight share a number of similar physiological responses, the study of space flight may provide a model system to help scientists interested in understanding aging. Some of these similarities include bone and muscle loss and balance disorders and sleep disturbances. Space biomedical researchers and gerontologists believe more research in these areas could help older people live more productive and active lives.

Glenn has been a catalyst in promoting the use of space flight for the benefit of healthy and productive aging.

The human research on this mission will be conducted by NASA and the National Institute on Aging, part of the National Institutes of Health. The research was peer reviewed by independent scientists and includes studies on sleep disorders, muscle atrophy, balance, and clinical evaluations of blood and heart function.

"The research on this mission will contribute to building our knowledge and understanding of the aging process," said Dr. Richard Hodes, director of the National Institute on Aging.

NASA has previously flown astronauts up to 61 years old. At least eight crew members over the age of 55 have flown multiple missions. Shannon Lucid was 54 when she spent six months aboard Mir.

**Representatives from nine federal agencies gathered at SSC for the Environmental Management Systems and Remote Sensing Workshop earlier this month. The workshop focused on the opportunities and capabilities of using advanced remote sensing technologies in concert with the new series of international environmental management standards. Ruby Robinson, second from left and James "Doc" Smoot, center, both with Lockheed Martin Stennis Operations, give workshop members a tour of CRSP facilities. The workshop was sponsored by the Global Environment & Technology Foundation, located in Annandale, Va., in partnership with SSC's Commercial Remote Sensing Program.**

## Gilbrech at the helm of X-33 program at Stennis

With the 21st century rapidly approaching, America's brightest minds are working toward developing the rockets and futuristic launch vehicles that will blaze the path to space and to worlds unknown in the new millennium.

Testing the engines for launch vehicles is Stennis Space Center's business. The space center tested the first and second stages of the Saturn V rocket that took astronauts to the moon in the 1960s and early 1970s. Stennis has also tested the Space Shuttle's main engines since 1975.

NASA's Dr. Rick Gilbrech is at the helm of a program that will begin testing a new rocket engine for an entirely new spacecraft later this year. Gilbrech is project manager of the Reusable Launch Vehicle (RLV) Office at Stennis. He is leading a team of civil servants and contractors that will test the XRS-2200 Linear Aerospike Engine, built by the Rocketdyne Division of Boeing North American Inc. for the X-33.

The X-33 is an advanced technology demonstrator for the RLV program. Lockheed Martin Skunk Works of Palmdale, Calif. — the company that is building the vehicle—plans to conduct the first test flight in July 1999 and achieve up to 15 flights by December 1999. The goal of the NASA-industry RLV partnership is to design a new launch vehicle to lower the cost of putting payloads in space.

NASA will test the aerospike engines on a stand formerly used to test Space Shuttle Main Engines.

Gilbrech, a native of Holly Grove, Ark., earned his bachelor's from Mississippi State University and his master's and doctorate degrees from the California Institute of Technology, better known as Cal-Tech.

**Dr. Rick Gilbrech, project manager of the Reusable Launch Vehicle Office at Stennis.**

### SSC Employee Profile

He started work at Stennis in July 1991 and became deputy manager of the National Aerospace Plane (NASP) project at Stennis in 1993. That project was responsible for building the E-2 test facility, then known as the High Heat Flux Facility, for the NASP project. The E-2 is now used to test materials, such as fuel tanks, for the X-33.

As NASA moved ahead in its initiative to develop new, reusable launch vehicles, Stennis established the RLV project office. Gilbrech manages the office and all projects

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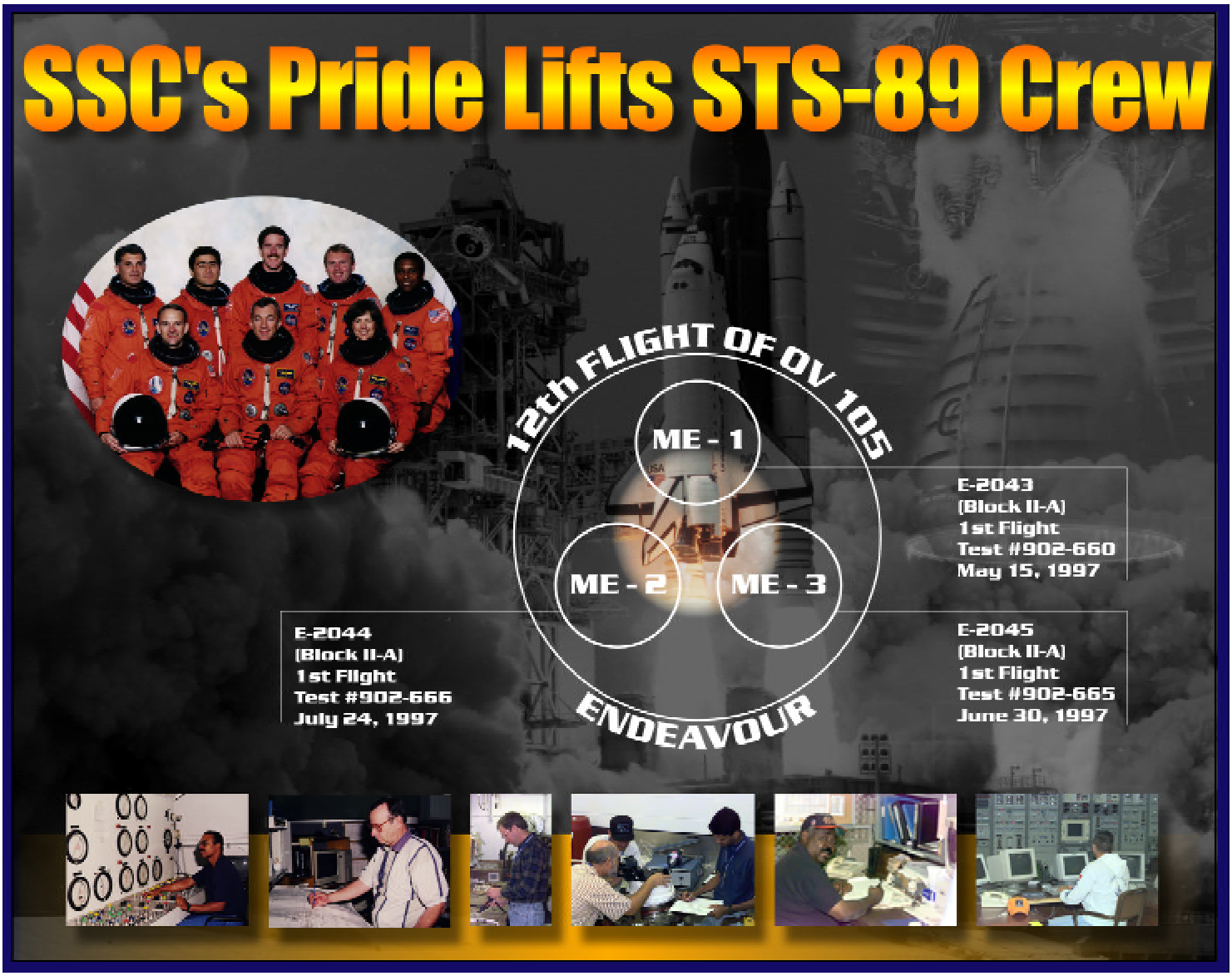


## Posters used to show importance of mission and role employees play

Pat Mooney has a way of reminding workers throughout Stennis Space Center about the important role they play in America's space program.

Mooney is NASA's manager of the Space Shuttle Main Engine Project Office at Stennis. Before each Space Shuttle launch, he works with Stennis Multimedia Services to design and print about 35 color posters that are placed around the test complex and the shops.

The posters contain a photo of the current shuttle crew, and information about the three main engines that will power the upcoming flight. Included are the engine unit numbers and the dates they were tested at Stennis. The posters also contain photos of the Stennis team members at their work stations.

The most recent poster has the title, "SSC Pride Lifts STS-89 Crew." This mission is the first to fly three newly enhanced Block IIA main engines. Engine number 2043 was acceptance tested May 15, 1997, engine number 2044 was tested July 24, 1997, and engine number 2045 was tested June 30, 1997.

## First element of International Space Station to begin testing

The International Space Station will complete a major milestone toward its first launch when the first station piece, a U.S.-funded and Russian-built control module, is shipped from a Moscow factory this week to its Russian Space Agency launch site in Baikonur, Kazahkstan.

The actual shipping of the control module is scheduled to begin today.

The 20-ton module is targeted for a late June launch to begin the five-year, 45-flight orbital assembly of the new space station. It will be launched on a Russian Proton rocket from the Baikonur Cosmodrome in Kazahkstan. The control module was built by the Khrunichev factory, under contract to the Boeing Co., the prime contractor to NASA for the International Space Station. It will depart Khrunichev via a special rail car late next week to begin the 1,200-mile, five-day train journey to Baikonur, where it will begin five months of launch preparations and final testing.

# New research helps to delve into historical past of buffer zone area

When NASA created the Mississippi Test Facility in 1961, five communities were relocated to make room for America's space program. One unexpected outcome of the relocation was that the sites themselves were preserved and have remained relatively undisturbed for more than 30 years.

These untouched sites offer a wealth of information about the citizens of those towns and also about the early settlers and prehistoric inhabitants of this fertile area next to the Pearl River. This is where NASA research scientist Dr. Marco Giardino enters the picture.

Giardino is a research scientist with the Earth Systems Science Office at Stennis Space Center. He and Al Genin of Pass Christian, Miss., have been conducting research during the past three years into the history of the old Logtown area.

"We're doing extensive historical research on the land ownership and historical events that surround Logtown," he said. "We're doing some geological investigations and going out and surveying the woods (around the Logtown area)."

The research, being done in anticipation of logging activities, is mandated by federal and state regulations so that archaeologists can "prevent the destruction of sites that are important to understanding some aspect of the history of Mississippi," Giardino said.

To research a town that no longer exists, Giardino visited the state archives in Jackson, as well as the National Archives in Washington, D.C. What he has found is that many interesting people made their homes along the Pearl River.

"We found an unpublished diary written in 1723 by a French officer, who had been sent by Bienville to explore the Pearl River," he said. "We know from that account, at that time, there were no European settlers in the Logtown area. Very shortly after that, around 1724-1725, we have the first land grant from Bienville to a Frenchman in the area of Logtown. And from then on, we have pretty much an uninterrupted land record all the way to when NASA took over the land."

Giardino commented that research of land grants in this area was complicated by the fact that West Florida changed hands between the French, the Spanish, the British, back to the Spanish, back to the French, and finally to the Americans. "At least during three or four of these major transitions, all the land grants and deeds were either all reconfirmed or not reconfirmed," he said. "It's a fairly involved process."

In his research, Giardino utilizes remote sensing to help find the areas that may hide archaeological information. According to Giardino, these areas are much more evident in aerial photographs. Remote sensing uses special sensors either on aircraft or satellites to look at the surface of the Earth. Images taken by these sensors can be used to produce highly detailed maps.

The Earth Systems Science Office at Stennis works within NASA's Earth Science Enterprise, an effort within NASA to discover patterns in climate that will allow us to predict and respond to environmental events—such as floods and severe winters.

The Earth Science Enterprise also studies human response to environmental change.

**Dr. Marco Giardino, a research scientist with NASA's Earth Systems Science Office at Stennis Space Center, plans his next survey of the old Logtown area using maps that were compiled from remotely sensed data.**

# Foley chosen as Federal Women's Program Manager

Rhonda Foley has been appointed to serve in the collateral position of Federal Women's Program Manager.

Foley, who replaces Edna Gibson, came to Stennis Space Center in 1988 and has served in various progressive assignments as an engineer in the Safety and Mission Assurance Office. Most recently, she served as the chair of the Federal Women's Program Advisory Council.

Appointments to the Federal Women's Program Advisory Council were also made. Terri Jones, Elizabeth Messer and Wanda Wright-Trollinger will serve two-year terms.

**Rhonda Foley**

# Employee Assistance Program offers help to Stennis personnel

A company's success in the 21st century will depend largely upon the health and productivity of its workforce. Estimates show that 20 percent of all employees experience problems that, at one time or another, can reduce job performance.

Employees who suffer from personal problems tend to lose self-esteem, as well as their ability to be productive members of the work group. The result—the entire work community suffers.

Stennis Space Center's Employee Assistance Program (EAP) is available to employees and their families who face problems that affect job performance. Tim Donohoe, EAP coordinator with Johnson Controls World Services Inc., helps employees who experience personal or social problems. Such problems include physical illness, emotional disturbance, alcohol or other chemical substance abuse, or problems with marital, financial, legal or job-related matters.

**Tim Donohoe, SSC Employee Assistance Program Coordinator, provides information to employees on a variety of topics ranging from various disorders to referral sources.**

Donohoe serves as a bridge between a troubled employee and the resources available in the community, such as professional counseling. He provides individual counseling, follow-up and referrals; psychological assessment and testing; and supervisory training and consultation.

The EAP is part of Occupational Health Services directed by Dr. Maurice Taquino. EAP services are available to employees of any agency at Stennis, as well as members of their immediate family living in their household.

"The premise is that emotionally healthy people make better and more productive employees," Donohoe said.

Stennis began offering the Employee Assistance Program in 1985. Donohoe and Taquino worked together to develop the policy and implemented the program.

Donohoe holds a master's degree in clinical psychology from Mississippi State University and a bachelor's in psychology and public health from the University of Minnesota. He is a licensed professional counselor under the Mississippi State Board of Examiners and is a certified clinical mental health counselor and a nationally certified counselor under the National Board for Certified Counselors Inc.

Donohoe's office is located on the second floor of the Visitors Center, Building 1200. He can be reached at Ext. 3005.

# Slidell students help Stennis Space Center make successful transition

When NASA's Stennis Space Center decided to upgrade its on-site computers to a standard set of hardware and software called SDS97 (Stennis Desktop Services 97), Lockheed Martin's Information Systems Directorate began looking for the best way to accomplish the formidable task of upgrading about 1,000 computers at the center. That's when they discovered the Slidell Campus of Louisiana Technical College.

The college had worked with Lockheed Martin before, providing training for welders at the NASA Michoud Assembly Facility in New Orleans where the Space Shuttle's external fuel tank is designed and assembled. But when Lockheed suggested using some of the students from the college to help upgrade Stennis' desktop computers, some people were skeptical. Even Myles Bernard, telecommunications manager of the Information Systems Directorate at Stennis who was responsible for both the project and contacting the vo-tech, admits he didn't believe the students were up to the task in the beginning

"I didn't think you were going to get the job done," he told them at an appreciation luncheon Dec. 10 at the Vo-Tech following the successful completion of the project. "You proved me wrong."

The success of this project has led to the initiation of additional, future cooperation between the school and Lockheed. Vo-tech instructor Bill Little, who was in charge of the students working on the SDS97 project, has agreed to develop A+ certification training for Lockheed's own technicians at a greatly reduced price.

**A framed collage of the Space Shuttle and engine testing was presented to the students that assisted Lockheed Martin in the SDS97 conversion. Pictured front is student Martin Zapisek, second row from left, Bill Little, Vo-Tech instructor; Lisa McFall, Pamela Simmons, and David Calderone, students; Myles Bernard, Lockheed Martin; Pamela Jones, student; Bill Stone, Lockheed Martin; Brian Robins, student; Gregory Menina, Lockheed Martin; James Impastato, student; Chris Antoni, vo-tech; and Randy Stewart, Lockheed Martin.**

## RS-68...

(continued from Page 1)

cutbacks in shuttle. So we do have a slight increase projected for the next several years."

It's a matter of moving personnel from one program to another. New test programs have the test stands at Stennis booked up for the next 20 to 25 years, Miller said.

"This is very consistent with our strategic plan here to utilize all the test stands we have and keep everyone busy at a constant level so that we don't have the big peaks and valleys as programs come and go," he said.

Nearly 700 people work in the rocket testing business at Stennis.

## GILBRECH...

(continued from Page 4)

associated with the X-33 program. At Stennis, his office is part of NASA's Propulsion Test Directorate, but he also answers to the RLV office at the Marshall Space Flight Center in Huntsville, Ala.

In addition to managing the project at Stennis, his job requires him to spend time traveling to California where he meets with Lockheed Martin officials and participates in critical design reviews for the X-33.

When he's not on the road, Gilbrech spends time with his family in Picayune, which includes his wife, Shelly, and their two sons, Ryan, 8, and Brandon, 2.

## QUICK LOOK

■ **The SSC Golf League is looking for new members** for the 1998 season. The season runs from the end of April through the middle of September. If enough Louisiana residents are interested, there may be a split league with a Louisiana division. Call Robert Taylor at Ext. 7926 for more information.

■ **The Stennis Electronics/Communications Product Show** will be held Jan. 28 in Building 1100 Conference Center Room 107. It is being sponsored by the U.S. Geological Survey and Southern Electronics Supply. Eleven companies are scheduled to exhibit. Refreshments will be provided.

■ **The SSC Security Office reminds employees that it maintains a lost-and-found box.** If you are looking for, or have found a lost item, call the security dispatcher at Ext. 3636.

■ **A blood drive will be held from 9 a.m. until 3 p.m. Feb. 18** in the Building 1100 Conference Center. The blood drive is being conducted by the Louisiana Blood Center. For more information, contact Elizabeth Valenti at Ext. 1468.

■ **Keesler Federal Credit Union** has moved its ATM to directly in front of the cafeteria in Building 1100.

■ **Hot food again in the cafeteria.** The cafeteria will be fully operational Monday, Jan. 26. Limited hot food, salad bar and sandwich line will be available Jan. 20-23.

## SSME...

(continued from Page 1)

Station, and they will reduce risk and provide an overall safety benefit to the program.

Deployment of the space station will require the shuttle to carry an additional 16,000 pounds of payload than it does now. Critical to the assembly and operation of the station is the improved ruggedness and reliability of Block II main engines.

The first two main engine tests of 1998 at SSC were directly involved with developing the Block II.

On Jan. 6, a successful 250-second test was conducted on the A-2 test stand to see how the computer controller on a Block II engine would handle a lockup of the engine's hydraulic system. Engineers had purposely programmed the test profile so that the engine's hydraulic supply would fail at 210 seconds into the test. The engine controller's software indicated the failure and continued to perform and complete the scheduled test time.

A successful test Jan. 8 on the B-1 stand was conducted to simulate the fuel chill procedure of the main engines as is done at Kennedy for each launch.

Before a launch at Kennedy and before engine tests at Stennis, the extremely cold liquid propellants are routed through the engines. The difference is that the shuttle has recirculation pumps that create a back pressure on the fuel bleed system, which is normally not created for engine tests.

During the Jan. 8 test, a motorized facility valve was used to simulate a back pressure on the fuel bleed system for 15 minutes. This is not a new procedure in engine testing, but a more accurate simulation of the shuttle's fuel inlet conditions and is essential in development.


## LAGNIAPPE

*Lagniappe* is published monthly by the John C. Stennis Space Center. Roy Estess is the center director, and Myron Webb is the public affairs officer. Comments and suggestions should be forwarded to the Lagniappe Office, Building 1200, Room 207, Stennis Space Center, MS 39529, or call (228)688-3583.

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